M/035/009

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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TO: BILL DODGE
KENNECOTT CORPORATION
BARNEY'S CANYON MINE

Phone: (Fax) 569-7190

FROM: D. WAYNE HEDBERG
Minerals Reclamation and Development Program

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SUBJECT: DRAFT REVIEW RESPONSE TO BARNEY'S CYN. PERMIT REVISION APPLICATION DATED AUG 27, 1992.

REMARKS: PLEASE CONSIDER THIS DOCUMENT A "VERY ROUGH" DRAFT AND FOR DISCUSSION PURPOSES AT TOMORROW'S MTG. I WOULD EXPECT & HOPE THAT SEVERAL ITEMS CAN BE MODIFIED OR ELIMINATED AT CONCERNS THAT TIME. SEE YOU AT 9:00 AM TOMORROW.

Should you encounter any problems with this copy, or do not receive all the pages, please call

MN9/61

DRAFT DRAFT DRAFT

September 1, 1992

Mr.David I. Hodson
General Manager
Barney's Canyon Mine
8200 South 9600 West
P.O. Box 311
Bingham Canyon, Ut 84006-0311

Dear Mr. Hodson:

Re: Tentative Approval of Permit Revision, Barney's Canyon Mine, Kennecott Corporation, M/035/009, Salt Lake County, Utah

The Division has completed its second review of Kennecott's permit revision for the Barney's Canyon Mine. We received the original permit application on December 19, 1991. Kennecott submitted a draft amendment to the original December 91 submittal on August 10, 1992, and another draft on August 28, 1992. The operator will finalize the amendment prior to final approval.

The Division hereby grants tentative approval, of the plan revision, with the provision that the operator satisfactorily address the remaining plan deficiencies as outlined below, prior to final approval. The review comments are noted plan deficiencies, listed in chronological order, with reference to the specific section of the Minerals Rules. Please prepare your response in the same manner using a similar format.

R647-004-105: - Maps, Drawings & Photographs

105.2.11 - Proposed surface facilities (buildings, roads, ponds, etc.)

1. Three new maps (plates I, II & IV) were included with the latest submission. It is unclear if these are intended to "replace" the existing plates in the December/91 application? The plate numbers are the same, but they are titled differently. New maps that are to "replace" existing maps included in the original permit revision application, should be clearly indicated as such by the operator.

The numbering and titles on the replacement maps/plates should correspond with existing maps (if appropriate). New maps/plates that are meant to supplement the application, should have different numbers. - DWH

R647-004-106: - Operation Plan

106.3 - Estimated Acreage

After reviewing Table 3.10-1, the Division questions where/how does the 78 acres receiving no reclamation treatment fit into the disturbed area summary? - AAG

106.4 - Nature of materials including waste/overburden and estimated tonnage

1. The latest response includes analytical data regarding the acid-producing potential of the waste rock and wall rock of North BC South and South BC South pits. Based upon the analytical testing performed, the operator concludes that there will be no acid-producing potential in the North BC South pit. Little acid-potential will exist in the South BC South because Kennecott will buffer (and cover) the acid-producing waste by blending with oxidized waste rock as part of the natural dumping procedure.

   The Division requests further detailed information on where and how the rock samples were obtained from the pit areas not yet developed. From what depth(s) were the samples obtained? Were the analyses made from composite samples? How was it determined what would be waste rock and what would be wall rock? - DWH

2. The latest revised mine plan calls for an additional 10,100,000 tons of waste rock to be produced from the Melco pit. How was it determined that there still will only be approximately 1,100,000 tons of sulfide-bearing or sulfitic waste rock produced? How was it determined that only one tenth of one percent of all the waste rock produced from the South BC South pit will be sulfitic?

The application describes the waste rock from the North and South BC South deposits as being "calcareous sandstone, clay-altered sandstone, and orthoquartzite". Assuming the more calcareous sandstone waste rock would be the preferred material for use in buffering/neutralizing the sulfide-bearing waste rock, will it be selectively stockpiled for this use? If so, where would it be placed?

How will the more sulfitic waste rock be "visually" identified as it is mined and hauled from the pit(s)? What is the "visual threshold" for determining what is acceptable, non-sulfitic waste versus what is not acceptable waste which will require blending and/or burial? Who will have the responsibility for making this determination? How will it be determined, and by whom, that the sulfide-bearing/sulfitic waste rock is blended/buried properly at the dump sites? The Division requests that Kennecott provide some form of quality assurance/quality control plan for making these determinations. - DWH

R647-004-107 - Operation Practices

107.4 - Deleterious materials safely remove or isolate

1. Kennecott must address the requirements of The Division of Water Quality (DWQ) regarding the deposition of sulfide ore dumps, at the mine site. This information must be incorporated into the plan revision once approved by DWQ. Because the time frame for addressing this issue may take more than 30 days, the Division will proceed toward final approval and allow a 60 day time frame to resolve this deficiency. - HWS

2. Please explain more clearly what will happen with the sulfide wastes (ORE ??) if they remain onsite. Will the ore be blended and then capped or simply capped in place? The answer to this question may have to wait until Kennecott works out an acceptable plan for storing these materials onsite with DWQ. - HWS

R647-004-109 - Impact Assessment

109.2 - Wildlife habitat and endangered species

1. Have any impacts to wildlife resulted during the course of operation, from the operator's cyanide facilities? If so, please describe current mitigation techniques, being used, in the Mining and Reclamation Plan (MRP). This is something which might be addressed in the operator's updated and consolidated MRP, to be submitted later. - HWS

R647-004-110 - Reclamation Plan

110.2 - Roads, highwalls, slopes, leach pads, impoundments, drainages, pits, trenches, ponds, drill holes, etc. will be reclaimed

1. The Division will not allow angle of repose slopes, at the Melco dumps, because of the difficulty of reclaiming them. Successful reclamation of such slopes is questionable because of their steepness and the overall length of the slope. Also, operating on such a slope to implement reclamation would be unsafe. 2h:1v is the maximum slope angle the Division will allow on these dumps.

   If the waste material proposed for the 7300 dump cannot be pushed out to 2h:1v, because the natural slope is too steep (note; the slope here appears to be very close to 2h:1v), then the Division would suggest that the operator consider/evaluate placing this waste material onto the 7200 dump and push it out to 2h:1v.

   Pushing this material to a 2h:1v slope may not be as big a hardship, for the operator, as anticipated. Bingham pit operators have informed us that the Dry Fork Bingham dumps will be eventually extending into the area where the Melco dump will be situated. They plan to reach the 6850 level within approximately 3 years. Barney's Canyon could dump at angle of repose, and postpone regrading until the Bingham operation had completed dumping in this area of Dry Fork.

The Division will ask Kennecott to commit to the same type of reclamation described for these slopes, as described in the latest version of the plan revision. However, we will ask that a series of dozer basins be applied to the outslopes of the dumps in between the 100 foot terraces. This will improve water infiltration, decrease erosion and improve plant establishment. - HWS

2. The Division is not ready to approve the portion of the revision which addresses the reclamation of the Melco haul roads (including new portion to be constructed south of the Melco Pit), until further details can be worked out addressing the reclamation of the cut and fill slopes that Kennecott intends to leave. - HWS

R647-004-112 - Variance

THIS SECTION NEEDS FURTHER REVISION AND SPECIFICATION BY DOGM STAFF, INCOMPLETE AT THIS TIME

The Division will grant Kennecott a variance for pit/highwall reclamation for the North BC South and Melco pits, as well as for the South BC South pit highwalls which will remain after backfilling. The variance will not apply to any benches wider then 40 feet, associated with any of these pits.

The Division will not grant a variance for the outslopes of the Melco dumps (7200 or 7300). The dump faces must be regraded to no steeper than 2h:1v. The Division has already granted a variance from salvaging topsoil and the reapplication of topsoil material onto these waste dumps.

R647-004-113 - Surety

Refer to attached draft surety estimate. - AAG

SURETY ESTIMATE UPDATE DRAFT

Kennecott Utah Copper EXAMPLE

Barneys Canyon Mine Salt Lake County, Utah

M/035/009

Prepared by Utah Division of Oil, Gas & Mining

Last Update 09/01/92

DESCRIPTION:

-Reclamation estimate originally calculated in 1988-$ = $2,206,340

-Original estimate in 1988-$ for 629.7 reclaimed acres

-Surety posted was $2,700,000 in 1993-$

-Escalation factors through 1991 are actual Means Historical Cost Indices

Disturbed acreage in 1988 = 629.7

$ per acre in 1992-$ = $3,685

Escalate the original surety to current dollars (1992)

CALCULATIONS	YR	ESCAL FACTOR	BOND AMOUNT
F = P(1 + i)**n	1988	0.0181	$2,206,340
F = Future Sum	1989	0.0177	$2,245,392
P = Present Sum	1990	0.0077	$2,262,682
i = Escalation Factor	1991	0.0127	$2,291,418
n = number of periods	1992	0.0127	$2,320,519

	TOTAL
"Reclaimed" acreage in revision =	769.5
Multiplied by $/acre 1992-$ =	
Add to 1992-$ total	

			$515,179
			$2,835,698

Escalate this total 5 years into the future

CALCULATIONS	YR	ESCAL FACTOR	BOND AMOUNT
F = P(1 + i)**n	1988	0.0181	$0
F = Future Sum	1989	0.0177	$0
P = Present Sum	1990	0.0077	$0
i = Escalation Factor	1991	0.0127	$0
n = number of periods	1992	0.0127	$2,835,698
	1993	0.0127	$2,871,712
Three Yr Average = 1.27%	1994	0.0127	$2,908,182
Used to Project 5 Yrs	1995	0.0127	$2,945,116
Into the Future	1996	0.0127	$2,982,519
From the Year 1992	1997	0.0127	$3,020,397

Updated Surety Amount Rounded (1997 $) $3,020,000

** Average cost per acre = 3,925 ($/ACRE)